Addendum to the 2011 Miscellaneous ABS Sampling and Analysis Plan:
Re-analysis of Gravel Samples Collected from the Libby City Pit
June 7, 2012

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Background

The Libby City Pit is utilized as a source of structural fill material. Stockpiles within the City Pit were sampled on April 17, 2012. A total of eight gravel samples (FM-00013 to FM-00020) were collected from each of the onsite stockpiles. Each sample was collected as a 30-point composite collected from the top 6 inches of the stockpile.

Samples were sent to the Sample Preparation Facility (SPF) in Troy, Montana for preparation prior to analysis by the Libby-specific polarized light microscopy (PLM) methods. At the SPF, samples were split, sieved, and ground in accordance with Libby-specific standard operating procedure (SOP) ISSI-LIBBY-01. In brief, the raw sample was dried and then split into two aliquots. One aliquot is placed into archive {A}, and the other aliquot is sieved into coarse (> ¼ inch) {C} and fine fractions. The fine fraction was ground to reduce particles to a diameter of 250 µm or less and this fine-ground portion was split into 4 aliquots {FG1, FG2, FG3, FG4}. The coarse fraction was then sent for analysis by PLM gravimetric evaluation (i.e., PLM-Grav) in accordance with Libby-specific SOP SRC-LIBBY-01. One of the fine-ground fractions was sent for analysis of Libby amphibole asbestos (LA) by PLM visual area estimation (i.e., PLM-VE) in accordance with Libby-specific SOP SRC-LIBBY-03. The three remaining fine-ground fractions were archived. All PLM analyses were performed by the U.S. Environmental Protection Agency (EPA), Environmental Services Assistance Team (ESAT), Region 8 laboratory.

The following table summarizes the PLM results for each sample:

Sample ID	PLM-Grav Result (coarse fraction)			PLM-VE Result (fine-ground fraction)		
	LA	OA	CH	LA	OA	CH
FM-00013	ND	ND	ND	Tr	ND	ND
FM-00014	ND	ND	ND	ND	ND	ND
FM-00015	ND	ND	ND	Tr	ND	ND
FM-00016	ND	ND	ND	ND	ND	ND
FM-00017	ND	ND	ND	ND	ND	ND
FM-00018	ND	ND	ND	ND	ND	ND
FM-00019	ND	ND	ND	Tr	ND	ND
FM-00020	ND	ND	ND	Tr	ND	ND

LA = Libby amphibole
OA = other amphibole
CH = chrysotile
ND = non-detect
Tr = trace (LA detected at levels lower than the 0.2% LA reference material)

As shown, the PLM-VE analysis reported trace levels of LA in the fine-ground fraction for 4 samples. Other types of asbestos were not detected in the fine-ground fraction. No asbestos was detected in any of the coarse fractions.

Study Purpose

The PLM-VE method does not provide quantitative information on LA concentrations below 1 percent (%) (by mass). In addition, PLM-VE is not able to reliably detect concentrations below about 0.1%. Preliminary performance evaluation studies have shown that soil samples prepared using a fluidized bed asbestos segregator (FBAS) and analyzed by transmission electron microscopy (TEM) can reliably detect LA concentrations of 0.005% and results can be reported quantitatively (as structures per gram [s/g]).

The purpose of this study is to provide an inter-laboratory confirmation of the PLM-VE results and to better characterize the potential levels of LA in these samples by TEM.

Approach

In order to provide an inter-laboratory confirmation of the PLM-VE results, one of the archived fine-ground aliquots (e.g., FG2) for each sample should be analyzed by PLM-VE by a different laboratory than who performed the original analysis (i.e., not the EPA ESAT Region 8 laboratory). Detailed requirements for the PLM analysis of these samples are presented in Section 8.1.2 of the *2011 Miscellaneous ABS Sampling and Analysis Plan (SAP)* (EPA 2012). In brief, the fine-ground aliquot will be examined by PLM-VE in accordance with SOP SRC-LIBBY-03.

In order to better characterize LA concentrations in these eight samples, the archived portion {A} of each sample will be prepared using FBAS in accordance with SOP ESAT-LIBBY-01. The resulting replicate filters will then be analyzed for asbestos by TEM. Detailed preparation analysis requirements for these samples are presented in Section 8.1.1 and 8.1.3, respectively, of the *2011 Miscellaneous ABS SAP* (EPA 2012). In brief, the archived soil for each sample will be sieved using sieves with two opening sizes (6.3 millimeters [mm] and 0.85 mm). Soil material passing through the 0.85 mm sieve will be retained for use in the FBAS. For each sample, a total of three air filter replicates will be generated from the FBAS aliquot. Filter replicates will be examined by TEM in basic accordance with ISO 10312 counting and recording rules, with all applicable Libby-specific laboratory modifications. Similar to the Borrow and Background Soils scenarios (see EPA 2012), if observed, chrysotile structures should be recorded for the gravel pit samples, but chrysotile structure counting may stop after 50 structures have been recorded.

These analyses will be performed in accordance with the quality assurance/quality control (QA/QC) requirements specified in Section 8.7 of the *2011 Miscellaneous ABS SAP* (EPA 2012). These analytical and QA/QC requirements are also summarized in the SAP-specific *Summary of Analytical Requirements for Asbestos* (as provided in Appendix E of the SAP).

References

EPA. 2012. *Sampling and Analysis Plan: 2011 Miscellaneous Activity-Based Sampling, Libby Asbestos Site, Operable Unit 4.* Prepared for the U.S. Environmental Protection Agency, Region 8 by CDM Federal Programs Corporation. Revision 2 – June 2012.